

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A multi-frequency microstrip patch antenna device comprising including:

a ground-plane or ground-counterpoise; ~~and~~

a first conducting layer, said conducting layer acting as ~~an~~ the active patch for the whole antenna device, said active patch being fed at least at a point of said first conducting layer; ~~characterised in that~~

~~said microstrip patch antenna comprises~~ at least two additional conducting layers acting as parasitic patches, said parasitic patches being placed underneath said ~~first~~ active patch, at different levels between said active patch and said ground-plane or ground-counterpoise; and

wherein at least one of said at least two additional conducting layers acting as parasitic patches is not short-circuited to said ground-plane or ground-counterpoise.

2. (Currently Amended) A The microstrip patch antenna device according to claim 1, wherein at least one of the parasitic patches includes a multilevel structure.

3. (Currently Amended) A The microstrip patch antenna device according to claim 1 or 2, wherein at least one of the parasitic patches includes a space-filling structure.

4. (Currently Amended) A The microstrip patch antenna device according to claim 1, wherein at least the active patch includes a multilevel structure, a space-filling structure or a combination of a multilevel structure and a space-filling structure.

5. (Currently Amended) A The microstrip patch antenna device according to claims 1 or 4, wherein ~~a the active patch~~ geometry of the active patch is selected from the group consisting of: square, circular, rectangular, triangular, hexagonal, octagonal and fractal.

6. (Currently Amended) A The microstrip patch antenna device according to claim 1, wherein a geometry of the parasitic patches is selected from the group consisting of: square,

circular, rectangular, triangular, hexagonal, octagonal and fractal.

7. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein the active patch and the parasitic patches have different shapes and dimensions.

8. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein the antenna features a multiband behavior at as many bands as patch layers in the antenna arrangement.

9. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein the antenna features a broadband behavior.

10. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein said antenna is used to operate simultaneously for several communication systems.

11. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein the antenna is fed at the active patch at two feeding points to provide dual polarization, slant polarization, circular polarization, elliptical polarization or a combination thereof.

12. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein at least one of the patches is larger than an ~~the~~ operating wavelength and at least a portion of a ~~the~~ perimeter of said patch is a ~~an~~ space-filling curve and the antenna is operated at a localized resonating mode of order larger than one for said particular patch.

13. (Canceled)

14. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein a ~~the~~ centre of at least one patch is non-aligned with a vertical axis orthogonally crossing the active patch at its centroid.

15. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein at least one patch is not horizontally aligned with respect to the other patches.

16. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein the antenna is fed by means of at least a conducting pin, a conducting wire or a conducting post, said conducting pin, wire or post crossing all the layers through an aperture at each of the parasitic patches, and said conducting pin, wire or post being electromagnetically coupled to the active patch either by means of ohmic contact or capacitive coupling.

17. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein the antenna is fed by means of a microstrip line, said microstrip line being placed underneath the ground-plane and coupled to the upper patch by means of a slot on each individual parasitic patch and on the ground-plane.

18. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein the active and the parasitic patches are printed over a dielectric substrate.

19. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 18, wherein said dielectric substrate is a portion of a window glass of a motor vehicle.

20. (Currently Amended) ~~A~~ The microstrip patch antenna device according to claim 1, wherein the antenna device operates simultaneously at any combination of frequency bands selected from the group consisting of: AMP, GSM900, GSM1800, PCS1899, CDMA, UMTS, Bluetooth, TACS, ETACS, DECT, Radio FM/AM, and GPS.

21. (New) The microstrip patch antenna device according to claim 1, wherein the active patch is short-circuited to said ground-plane or ground-counterpoise.

22. (New) The microstrip patch antenna device according to claim 1, wherein none of the at least two conducting layers acting as parasitic patches is short-circuited to said ground-plane or ground-counterpoise.